Fuel Cell Technology Update – July 5, 2000

To: Reporters, editors and investors following business, energy, automotive and technology news. Let us know if you would prefer to receive the full updates via email, or if you wish to be removed from our list. For more information on stories, call (202) 785-4222.

TRANSPORTATION APPLICATIONS

Thor Will Build Fuel Cell Buses by 2001. Thor Industries announced that it will build the world’s first commercially viable, fuel cell powered, zero emissions transit buses in an exclusive alliance with International Fuel Cells (IFC) and ISE Research. The first bus will be built by 2001. Thor has exclusive rights for use of IFC’s fuel cells in the complete drive system, called ThunderPower, for all North American mid-sized buses.

Mitsubishi To Develop FCVs With Heavy Industries. Mitsubishi Motors Corporation will develop fuel cell vehicles with Mitsubishi Heavy Industries, Ltd. under an existing agreement, rather than joining DaimlerChrysler on the project. Mitsubishi and Mitsubishi Heavy Industries signed an agreement two years ago under which they would jointly introduce a fuel cell car by 2005. Mitsubishi may collaborate in the future with DaimlerChrysler, since DaimlerChrysler has acquired a 34 percent stake in Mitsubishi.

EU Introduces Prototype Fuel Cell Vehicle. European Union (EU) officials introduced a new prototype fuel cell powered vehicle that uses hydrogen fuel. The prototype was produced by a group of European automobile manufacturers through research programs supported by the EU’s Commission on Research. Research Commissioner Philippe Busquin expects the fuel cell vehicle to cost 10 percent more than a conventional vehicle.

Manhattan Scientifics Completes Testing of Fuel Cell Bicycle. Manhattan Scientifics has completed testing of its Hydrocycle, a bicycle that operates on a fuel cell. The hydrogen fuel is stored in a two-liter carbon fiber pressure vessel located behind the seat. The bicycle, developed to compete with today’s battery-powered bicycles, has a range of 70 to 100 kilometers and a top speed of 30 kilometers per hour. http://www.hawkassociates.com/mhtx/mhtxpr28.htm.

California Fuel Cell Partnership Adds Two. The Department of Transportation (D.O.T.) and International Fuel Cells have both joined the California Fuel Cell Partnership (CFCP) to help promote fuel cell vehicles. The partnership hopes that D.O.T.’s experience working with fuel cell powered transit buses will help enhance its fuel cell demonstration and infrastructure efforts. The agency will participate in CFCP through its advanced vehicle and Federal Transit Administration programs. International Fuel Cells is involved in both automotive and bus fuel cell applications and is supplying fuel cells to Hyundai, who also recently joined the partnership.
EAC Team to Develop Alkaline Fuel Cells, Announce IPO. Electric Auto Corporation (EAC) will participate in the development of two different variations of the alkaline fuel cell at the Technical University of Graz in Austria. The team hopes to develop an advanced alkaline fuel cell for EAC’s fleet of Silver Volt electric cars. The company also announced an Initial Public Offering of its shares to be available to the public in certain states. More information can be found in the EAC’s web site: www.electricauto.com.

STATIONARY POWER

SatCon Introduces PowerGate Fuel Cell Power Conversion System. SatCon Technology Corporation introduced the PowerGate™ Power Conversion System with the new GridLink™ Utility Grid Interface for fuel cell distributed power generation. The new GridLink Interface allows fuel cells to operate just like “plug-in” appliances and will enable them to operate seamlessly in a grid-independent or grid-parallel mode. http://www.businesswire.com/cgi-bin/f_headline.cgi?bw.060500/201571088&ticker=SATC.

IdaTech Delivers First Fuel Cell System to Bonneville Power Administration. IdaTech delivered the first of 110 fuel cell system units slated for sale to Bonneville Power Administration (BPA), an agency of the U.S. Department of Energy. The unit generates 6 kW of combined heat and energy and is the first of 10 that will be installed over the next three months. http://www.businesswire.com/cgi-bin/f_headline.cgi?bw.060900/201610031&ticker=IDA.

Second European Power Plant with Direct FuelCell Technology to Start Up in October. FuelCell Energy is supplying the fuel cells for a power plant to be built at a hospital in Germany. The Rhone Klinilum, in Bad Neustadt will be the first hospital in the world to use FuelCell Energy’s Direct FuelCell™ technology. The power plant will start up in October. http://www.businesswire.com/cgi-bin/f_headline.cgi?bw.053000/201511522&ticker=FCL.

Bayernwerk Will Test Fuel Cell Cogeneration Unit. Bayernwerk, a large German electric utility, plans to erect a fuel cell cogeneration system in the technology pavilion of the building center at Munich Fairgrounds. The fuel cell system will be delivered at the beginning of 2001, by the Fraunhofer Institute for Solar Energy Systems, with an electric power of 3.3 kW and a thermal output of 4.5 kW. http://www.hydrogen.org/News/gazette.html.

LADWP Headquarters to House Fuel Cell Power Plant. The Los Angeles Department of Water and Power and FuelCell Energy have signed a contract for a fuel cell power plant to be installed at the LADWP headquarters. The new 250 kW Direct FuelCell™ power plant is expected to be operational in about nine months. http://www.businesswire.com/cgi-bin/f_headline.cgi?bw.060100/201531202&ticker=FCL.

Teledyne Technologies Allies With Humboldt State. Teledyne Technologies announced that its Energy Systems unit has completed a strategic agreement with Humboldt State University to produce, use, and sell fuel cell systems based on technology developed at the University’s Schatz Energy Research Center. Current projects at the research lab include a fuel cell generator in Redwood National Park, a fleet of fuel cell powered vehicles in use near the city of Palm Desert, Calif., and the Stack-in-a Box™, a portable power generator used for education and demonstrations.

power plant in 2001, followed by four additional 250 kW power plants or a MW-class plant. The total value of the contract is $6.25 million for a total of 1.25 MWs.  

**PORTABLE/SPECIALTY POWER**

**DCH and Daido Form Joint Venture.** DCH Technology and Daido Metal Company, a manufacturer of precision components, announced a joint venture to provide fuel cells for portable applications in Asia. Under the agreement, Daido will manufacture and assemble fuel cell products, focusing on the production of small portable fuel cells, ranging from less than one watt to 50-watt units. The production line will be housed at a $12 million, 50,000 square-foot facility being built in Japan.  

**FUELS/REFORMERS/STORAGE**

**DCH Technology Purchases Fuel Flexible Reformers from Hydrogen Burner Technology.** DCH Technology has purchased 105 fuel flexible reformers from Hydrogen Burner Technology (HBT). Enable Fuel Cell Corporation, a subsidiary of DCH, will be integrating its larger Enable™ fuel cell energy systems with the reformer for specific applications. The HBT reformers can operate on gasoline, diesel, natural gas, propane, or methanol to produce hydrogen for fuel cells. For more information, email Inquire@HydrogenBurner.com.  

**IMPCO and Thiokol Form Strategic Alliance.** IMPCO Technologies has signed a strategic alliance with Thiokol Propulsion to provide IMPCO with increased research capabilities as well as greater resources in hydrogen and compressed natural gas fuel technology. IMPCO will begin developing Thiokol’s composite conformable storage tanks, designed to optimize the storage space available in hydrogen fuel cell vehicles.  

**Blue Star Assists DOE In Quest for Improved Fuels for Fuel Cell Vehicles.** Blue Star Sustainable Technologies, a joint partner with Hawks Industries, will provide technical support to the U.S. Department of Energy (DOE) in support of the Partnership for a New Generation of Vehicles. This project is funded under a contract with DOE’s Argonne National Laboratory, with project management by the University of Chicago. Blue Star will work with Argonne scientists in the formulation of a multiyear program plan for the development of appropriate new fuels for fuel cell powered vehicles.  

**FUEL CELL COMPONENTS**

**Modine and XCELLSIS Sign Agreement for Fuel Cell Component Development.** Modine Manufacturing Company and XCELLSIS signed an exclusive cooperation agreement that focuses on Modine’s development and manufacturing of components for fuel cell engines in buses, cars and trucks. Modine will develop thermal- and fluid-management solutions for XCELLSIS.  

**Plug Power And Engelhard to Develop Advanced Catalysts.** Plug Power and Engelhard Corporation have joined for development and supply of advanced catalysts to increase the overall performance and efficiency of Plug Power’s fuel processor – the front end of the fuel cell system. Over the next three years, Plug Power will contribute $10 million to fund Engelhard’s development efforts and Engelhard will purchase $10 million of Plug Power’s common stock.
Johnson Matthey Announces Fuel Cell Technology. Johnson Matthey announced that the company is developing a processor that converts natural gas into hydrogen for fuel cells. The company’s fuel cells are slated for residential applications, but eventually the technology will be applied to motor vehicles.

Apex Plastic Develops Complete Manufacturing Cell for Bi-Polar Plates. Apex Plastic Technologies has developed an injection molding that cuts the cost and production time for producing bi-polar plates for fuel cells. Apex joined with Milacron and Premix/Quantum to create the material and molding technology. [http://www.apexts.com](http://www.apexts.com).

**REPORTS AND MARKET STUDIES**

“Automotive Fuel Cells – The Future is Here”. Allied Business Intelligence (ABI) recently released a new report entitled “Automotive Fuel Cells – The Future is Here”, which predicts that millions of fuel cell powered vehicles will be on the road by 2010. The report also claims that by the second decade of this century, the mass production of automotive fuel cells will ultimately result in a total rejection of oil as a vehicle fuel. [http://www.alliedworld.com](http://www.alliedworld.com).

“Fuel Cells” Reports Rise In Fuel Cell Demand. “Fuel Cells”, a new study from the Freedonia Group, reports that the demand for fuel cells in the U.S. market will rise fourfold through the year 2004 to $2.4 billion. Explosive growth will continue thereafter, with the market reaching $7 billion by 2009. Activity within the fuel cell industry is expected to increasingly shift from product development, test marketing, demonstration and prototyping to the actual sale of finished products to real world customers. [http://www.freedoniagroup.com](http://www.freedoniagroup.com).


**MISCELLANEOUS**

Two New Fuel Cell Newsletters In the Making. Two new fuel cell newsletters are in the works, sponsored by the U.S. Department of Energy’s National Energy Technology Laboratory and published by the U.S. Fuel Cell Council and the National Fuel Cell Research Center, located at the University of California, Irvine. The content of the monthly newsletter will be a roundup of stories on fuel cell programs in government agencies along with fuel cell industry headlines, and information on current and upcoming government research solicitations on fuel cells. To subscribe for the newsletter, which is expected to launch mid-July 2000, go to: [http://fuelcellnews.listbot.com](http://fuelcellnews.listbot.com). Additionally, a quarterly newsletter will provide more in-depth coverage and will be published as a PDF document and distributed to the email list. The first issue of the quarterly is expected in September 2000.

Porvair PLC Launches Porvair Fuel Cell Technologies. Porvair PLC has created Porvair Fuel Cell Technologies in order to bring its porous materials expertise to the emerging fuel cell technology market. The company will continue to provide fuel cell manufacturers with prototype products in fuel processing, emissions control, heat exchange, and moisture control applications.
Reliant to Develop New PEM Technology. The Texas A&M University agreed to license proton exchange membrane (PEM) fuel cell technology to Reliant Energy. Reliant aims to further the commercial potential of the technology developed by A. John Appleby of the Texas Engineering Experiment Station (TEES). The new cell ranges in application sizes from 7.5 kW to 150 kW.

Acumentrics Forms SOFC Team, Begins Manufacturing Fuel Cell Systems. Acumentrics Corporation announced that Nigel Sammes, Ph.D., and seven Solid Oxide Fuel Cell (SOFC) scientists and engineers from the University of Waikato in New Zealand have joined the company. Acumentrics intends to begin production of complete power systems that operate from propane or natural gas and output AC electricity, without the need of an external reformer, air blower, or fuel pump.

NYPA Fuel Cell in Yonkers Earn Environmental Award. The New York Power Authority’s (NYPA) fuel cell power plant at the Westchester County Wastewater Treatment Plant in Yonkers has been selected by the New York Chapter of the Association of Energy Engineers (AEE) as its Environmental Project of the Year. http://www.businesswire.com/webbox/bw.062100/201732686.htm.

Fuel cells generate electricity without combustion by harnessing the energy created when hydrogen and oxygen are chemically combined. Fuel Cells 2000 is an independent, nonprofit activity dedicated to the commercialization of fuel cell technologies.